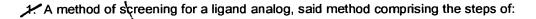
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- a) adding a candidate ligand to a non-naturally occurring cell surface receptor analog comprising an amino acid sequence that is less than about 95% identical to the extracellular domain of a corresponding naturally occurring human cell surface receptor, wherein said receptor analog binds a natural ligand for said naturally occurring human cell surface receptor at the same or higher binding affinity than said naturally occurring human cell surface receptor; and
- b) determining the binding of said candidate ligand to said receptor analog.
- 2. A method according to claim 1 wherein said cell surface receptor analog is on the surface of a eukaryotic cell.
- 3. A method according to claim 1, wherein said cell surface receptor analog is on the surface of a prokaryotic cell.
- 4. A method according to claim 1, wherein said cell surface receptor analog is on the surface of a virus.
- 5. A method according to claim 1, wherein said cell surface receptor analog is immobilized on a solid support.
- 6. A method according to claim 1, wherein said cell surface receptor analog is in an aqueous solution.
- 7. A method according to claim 1, wherein said cell surface receptor analog comprises only an extracellular domain.
- 8. A method according to claim 1, wherein said cell surface receptor analog comprises an extracellular domain and a transmembrane domain.

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- 9. A method according to claim 1, wherein said cell surface receptor analog comprises an extracellular domain, a transmembrane domain and a cytoplasmic domain.
- 10. A method according to claim \(\), further comprising the steps of:
 - designing said cell surface receptor analog, wherein said step of designing is executed by a computer program and wherein said cell surface receptor analog has a calculated structure that is different from a calculated structure of said corresponding naturally occurring human cell surface receptor;
 - d) synthesizing a nucleic acid encoding said cell surface receptor analog; and
 - e) expressing said cell surface receptor analog.

A method of screening for ligand analogs, said method comprising the steps of:

providing a eukaryotic cell, comprising a non-naturally occurring cell surface receptor analog comprising an amino acid sequence that is less than about 95% identical to the extracellular domain of a corresponding naturally occurring human cell surface receptor, wherein said receptor analog binds a natural ligand for said naturally occurring human cell surface receptor at the same or higher binding affinity than said naturally occurring human cell surface receptor;

- b) adding a candidate ligand to said eukaryotic cell; and
- c) determining the signaling of said cell surface receptor analog.
- 12. A method according to claim 11, wherein said cell surface receptor analog is a chimeric receptor comprising an extracellular domain and a cytoplasmic domain from at least two different naturally occurring cell surface receptors.
 - 13. A method according to claim 1 or 11 wherein said cell surface receptor analog comprises an exogenous dimerization domain.
 - 14. A method according to claim 13, wherein said exogenous dimerization domain is fused to the cytoplasmic domain of said cell surface receptor analog.

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- 15. A method according to claim 13, wherein said exogenous dimerization domain is fused to an internal site of said cell surface receptor analog.
- 16. A method according to claim 13, wherein said exogenous dimerization domain is fused to the extracellular domain of said cell surface receptor analog.
- 17. A method according to claim 1 or 11, wherein said naturally occurring human cell surface receptor is a cytokine receptor.
- 18. A method according to claim 1 or 11, wherein two monomers of said naturally occurring human cell surface receptor are crosslinked, whereby said non-naturally occurring cell surface receptor analog is formed.
- 19. A recombinant chimeric cell surface receptor complex, comprising at least two different monomers of a non-naturally occurring cell surface receptor analog wherein each of said monomers comprises an amino acid sequence that is different from an amino acid sequence of a corresponding naturally occurring human cell surface receptor, and wherein said recombinant chimeric cell surface receptor complex binds a natural ligand for said naturally occurring human cell surface receptor at the same or higher binding affinity than said naturally occurring human cell surface receptor.

ada A'

add B

add K'